

# The Tropical Timber Atlas

***This fully revised edition presents information on 300 species and will serve as a vital reference tool for operators in the tropical timber industry***

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**Wood for leisure:** The jetty at Tillac, France. Photo: Denis Delequeuche

In the mid-1980s, ITTO commissioned the Tropical Forest Technical Center (*Centre technique forestier tropical*—CTFT) of the French Agricultural Research Centre for International Development (*Centre de coopération internationale en recherche agronomique pour le développement*—CIRAD) to design and implement software for managing technical information on tropical timber. The initial version was developed from the CTFT's "Tropical Timber" database, which is a compilation of the findings yielded over several decades of research on tropical wood. The aim, on the one hand, was to disseminate information on tropical timber and make it available to industry operators and, on the other, to help in promoting and developing markets for the use of tropical timber, particularly of lesser-known species.

Later, the CTFT/CIRAD team in charge of tropical timber further developed the software and increased both the number of described species and the featured characteristics. In the mid-90s, the software was transferred from DOS to the Windows operating system and disseminated under the name *Tropix*. Several updated versions were released by the former Tropical Timber Research Unit, which is now CIRAD's BioWooEB Unit.

The most recent version of the software (v. 7.5.1, released in 2015) presents the technical characteristics of 245 species, including 17 species from temperate areas. *Tropix*<sup>1</sup> is widely used by timber industry operators, both in France and abroad.

Three tropical timber reference books were published between 1986 and 1990 that drew on the CTFT/CIRAD data:

- 1) *Tropical Timber Atlas*, Volume 1, Africa, published in English and French in 1986 by CTFT and the International Technical Association of Tropical Timber (*Association Technique Internationale des Bois Tropicaux*—ATIBT);

- 2) *Tropical Timber Atlas*, Volume 2, Asia–Australia–Oceania, published in English and French in 1987 by ATIBT; and
- 3) *Tropical Timber Atlas of Latin America*, published in English, French and Spanish in 1990 by ITTO, CTFT and ATIBT.

Tropical timber industry operators still widely use these three publications, all of which are now out of print, but they expressed a desire for an up-to-date publication on tropical timber containing the data and information they need to adequately plan their businesses. Thus, it was decided to improve the data and information in the *Tropix 7* software and compile these in a single publication (both hardcopy and electronic) called *Atlas des bois tropicaux* (available in English in digital form as the *Tropical Timber Atlas*), which would replace the three-volume series on timber species, as listed above.

ITTO approved the provision of financial support for the design and production of the new publication under its Thematic Programme on Trade and Market Transparency. The result was project TMT-SPD 010/12 Rev.1 (M).<sup>2</sup>

## Objectives

The project's development objective was to increase the use of tropical timber, particularly of lesser-known species. The specific objectives involved generating, collecting and compiling reliable and updated information on the technological characteristics and uses of tropical timber and making them available to all operators and stakeholders in the tropical forest sector. Thus, the new edition of the *Tropical Timber Atlas* will increase access to information on lesser-known timber species and serve as a vital

<sup>1</sup> Available at [tropix.cirad.fr](http://tropix.cirad.fr)

<sup>2</sup> The project title was: "Atlas of Tropical Timber Species, 1st edition. Technological characteristics and uses of 273 tropical timber species (and 17 temperate species)".



**Infinity and beyond:** This terrace around an infinity pool on the island of Réunion, France, is composed of osanga (*Pteleopsis hyloidendron*), a lesser-used tropical timber. Photo: David Bodelu/Fibres Industries Bois

reference tool for all relevant industry operators, including producers (e.g. forest managers, logging companies and policymakers), consumers (e.g. traders, processors, architects, builders, contractors and contracting authorities), research and educational institutions, and government authorities and decision-makers.

One of the project's strengths is that it was implemented in close consultation and collaboration with all relevant stakeholders, particularly private operators, from "upstream" forest managers to "downstream" users of tropical timber.

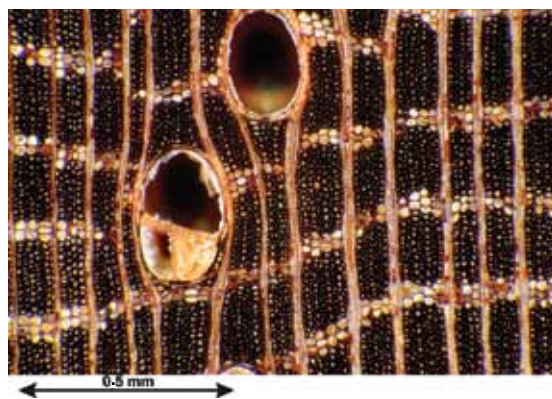
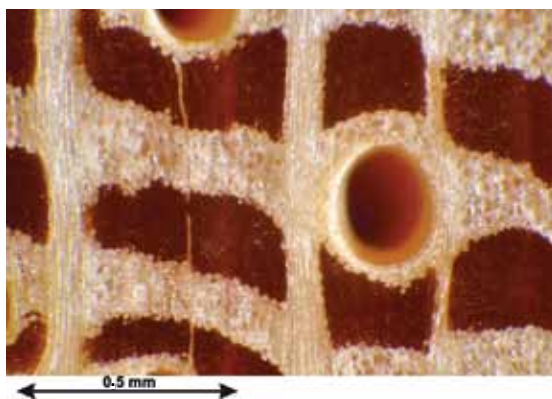
### Content of the atlas

The *Tropical Timber Atlas* introduces the main characteristics and technological behaviour of 300 timber species, comprising 283 tropical species and 17 temperate species. The temperate species were included because industry operators want to be able to compare them with tropical species they may be considering for particular purposes.

For each of the described timber species, the following data and information are included:

- **Pilot name:** as contained in the Nomenclature générale des bois tropicaux (ATIBT 2016).
- **Botanical family and names:** as contained in ATIBT (2016).

- **Trade restrictions:** i.e. whether listed in the CITES Appendices.
- **Description of log:** diameter and thickness of sapwood; buoyancy; and the conservation of logs in forests.
- **Description of timber:** colour; sapwood; grain; and interlocked grain.
- **Physical and mechanical properties:** density; Monnin hardness; fibre saturation point; volumetric shrinkage coefficient; total tangential shrinkage (TS); total radial shrinkage (RS); TS/RS ratio; thermal conductivity; calorific power; crushing strength; static bending strength; and modulus of elasticity.
- **Wood natural durability and impregnation suitability:** resistance to fungi; resistance to dry-wood borers (lyctus, auger beetles, death-watch beetles); resistance to termites; impregnability of heartwood; and use class according to natural durability.
- **Preservative treatment requirement:** need for treatment against dry-wood borer attack or in the case of temporary or permanent moisture exposure.
- **Drying:** risk of distortion; risk of case-hardening; risk of checking; and risk of collapse. For each species, a drying schedule for steam kilns is provided for reference. Nine drying schedules are available, with each schedule including five successive phases: preheating (two phases), drying, balancing and cooling.
- **Sawing and machining:** blunting effect; recommended saw teeth; recommended cutting tools; and suitability for peeling and slicing.
- **Assemblage:** behaviour of wood during nailing, screwing and gluing.
- **Commercial grading:** appearance grading for sawn timber; and visual grading (if any) for wood structure.
- **Response to fire.**
- **Major uses:** the list of uses is non-exhaustive; it includes major known uses and should be validated in compliance with trade practices. Potential uses for timber species are directly linked to their technological properties. Some uses (e.g. traditional, regional and past uses) are included for information only.



**Anatomy of a tree:** These images of the wood of *Eriobroma oblongum* (left) and *Dialium platysepalum*, obtained at 115X magnification, show the diversity of wood structure at the microscopic level.



**Striking a chord:** This exquisite electric guitar made of angelim rajado (*Zygia racemosa*), a lesser-used tropical timber, was created by Cosmik Guitar in Lille, France. Photo: Cosmik Guitar

- **Main common names in major producer countries** and commercial names in use in importing countries, where these differ from the pilot name given in ATIBT (2016).

At the front of the publication, detailed descriptive data sheets summarize all the above characteristics for each timber species and describe what makes them of interest for qualification or characterization. Each timber description is illustrated with three types of image:

- 1) two images of rift-cut and quarter slicing (or false-rift) timber;
- 2) two macro shots obtained using a microscope equipped with a camera showing magnified views of the natural wood surface after sanding and polishing—a magnification of 20X shows a cross-sectional view of the wood surface and a magnification of 115X shows a more detailed view of the wood's microscopic structure; and
- 3) an image of woodwork produced using the described timber species (e.g. in construction, construction parts, furniture, joinery, art artefacts and music instruments).

- properties not currently provided for all species (for example, lower heating value is given in the current edition for only 155 of the 300 timber species); and
- more illustrations, including of woodwork and uses for each species.

The *Tropical Timber Atlas* belongs to the users, who should take ownership of it. The atlas will be updated regularly to provide users with readily accessible, timely and relevant information. The authors welcome feedback, suggestions or proposals in connection with the contents and design of the publication.

Copies of the atlas can be obtained from the QUAE Editor at [www.quae.com](http://www.quae.com).

*Publications produced by the project can be found by inserting the project code TMT-SPD 010/12 Rev.1 (M) into the ITTO project search function at [www.itto.int/project\\_search](http://www.itto.int/project_search).*

## Prospects

The new edition of the *Tropical Timber Atlas* will be followed by later editions that will include:

- more descriptions of timber species—a planned second version of the atlas will describe 450 species;
- more properties, such as anatomic descriptions of timbers detailing the various parameters of the wood surface;

## References

ATIBT 2016. *Nomenclature générale des bois tropicaux*. Association Technique Internationale des Bois Tropicaux (ATIBT), Paris, France.